

## Chapter Seven: Financial and Institutional Framework

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Rail service in the state of Washington utilizes rail infrastructure owned by the BNSF Railway Company (BNSF). Extensive analysis of current and future railroad operations reveals that many infrastructure improvements are needed to meet the Washington State Department of Transportation's (WSDOT) vision of increased passenger rail service while maintaining freight capacity needs. To meet service and capacity demands, WSDOT is working with other agencies and organizations to identify projects, their costs, and financing options.

### What types of costs will be required to meet WSDOT's vision?

The Amtrak *Cascades* program will require different types of investments. These investments are generally categorized as capital costs and operating costs.

#### Capital Costs

Capital costs generally represent investment for improvements to railroad infrastructure, facilities and equipment. They normally result from a long-range plan that identifies the need for certain expenditures in certain years. The facility and equipment improvements identified in this report are considered capital costs. The purchase of new Amtrak *Cascades* trains is a current example of a system capital cost.

Chapter Five presented the capital costs for each of the project improvements that will be necessary to meet the service goals of this program.

#### Operating Costs

Operating costs are a direct function of running the train service every year. Costs include fuel, labor, maintenance (trains and facilities), insurance, marketing and sales, and general administrative costs.<sup>1</sup>

A passenger rail system not only incurs operating costs but also collects revenue from tickets purchased by passengers. Therefore, some costs are offset by revenue.

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<sup>1</sup>See **Appendix F** for a discussion of the various agreements that support Amtrak *Cascades* operations.

## What will the total system cost?

To achieve WSDOT's vision of faster and more frequent service, it is imperative that improvements and investments be made throughout the corridor, from Oregon to British Columbia. In addition to the three jurisdictions, our other partners – the BNSF, Sound Transit, and Amtrak - will also need to make capital investments in the corridor. To fulfill the rail system needs of all users over the next twenty years, a capital investment of approximately \$6.5 billion by 2023 will be required. However, it should be recognized that, given the uncertainties involved in projecting future expenses, total costs can only be broadly estimated.

**Exhibit 7-1** provides an overview of capital investments required in the corridor over the next twenty years. These investments include planned track and facility improvements, as well as train equipment purchases.

**Exhibit 7-1**  
**Corridor Capital Costs (in Millions of 2006 Dollars)**

	Mid-Point	2023	TOTAL
<b>Corridor Facilities Investments</b>			
Oregon (Union Station to the Columbia River)	\$59	\$362	\$421
Washington	\$1,527	\$2,439	\$3,966
British Columbia*	\$98-\$662	\$405	\$503-\$1,067
Sound Transit	\$671	--	\$671
<b>Total Corridor Capital Investments</b>	<b>\$2,355-\$2,919</b>	<b>\$3,206</b>	<b>\$5,561-\$5,825</b>
<b>Miscellaneous Capital Costs</b>			
Advanced Signal Systems	--	\$536	\$536
Trainsets	\$218	\$180	\$398
<b>Total Miscellaneous Capital Costs</b>	<b>\$218</b>	<b>\$716</b>	<b>\$934</b>
<b>Total Rail Corridor Costs</b>	<b>\$2,573-\$3,137</b>	<b>\$3,922</b>	<b>\$6,495-\$6,759</b>

*\*Capital costs for British Columbia are based on two scenarios: terminating service at Pacific Central Station in Vancouver, BC or providing a new terminus in Surrey, just south of Vancouver, BC. The cost differences between these two options are represented by the range in capital costs.*

**Note:** Year 2023 costs for Oregon and Washington assumes equal cost sharing for the construction of the Columbia River Bridge.  
Due to rounding, amounts may not equal amounts presented in the Amtrak Cascades Capital Cost Estimates Technical Report, 2006.

## How long will it last?

The current configuration of the BNSF main line was completed in 1914. Modifications and updates have been made periodically along the corridor since that time. However, for the most part, the system and infrastructure that we have in place today have been unchanged for ninety years. Using history as a guide, it is safe to say that the physical investments which the state of Washington and our partners make along the corridor will last – if properly maintained – well over fifty to one hundred years.

## What will it cost to operate?

The total annual cost of providing intercity rail service (operations and maintenance) is projected to range from today's approximately \$20 million to more than \$83 million by year 2023, excluding the effects of inflation.

Estimates have been developed that highlight how the anticipated growth in ridership will build operating revenues, improve the system's farebox recovery, and reduce the required operational subsidy. Looking forward, with full implementation of the plan, operating revenues are expected to increase to approximately seventy-one percent of operating costs by the mid-point service and to approximately ninety-nine percent by program completion. This results in an operating subsidy requirement of approximately \$11 million per year to start, increasing to \$15 million per year, and gradually decreasing until nearly all operating costs are recovered from service revenues. These estimates are expressed in constant 2003 dollars and are based on current operating experience and comparable corridor activity elsewhere in the Amtrak system.<sup>2</sup> **Exhibit 7-2** provides the operating costs, projected revenue, and anticipated subsidy for the Amtrak *Cascades* program for mid-point service and year 2023.

**Exhibit 7-2**  
**Operating Revenue, Costs, and Subsidy**

	2002	Mid-Point	2023
Annual Operating Revenue	\$9.2	\$36.5	\$82.3
Annual Operating Costs	\$20.3	\$51.5	\$83.4
Net Operating Revenues (Subsidies)	- \$11.1	- \$15.1	- \$1.1
Farebox Recovery	45%	71%	99%

Source: *Amtrak Cascades Operating Costs Technical Report, 2004*.

<sup>2</sup>*Amtrak Cascades Operating Costs Technical Report, 2004 and Amtrak Cascades Ridership and Revenue Forecasts Technical Report, 2004.*

During this twenty-year period, thirty-four million passengers are projected to travel a total of nearly 5.2 billion passenger miles. Cost and revenue estimates indicate that, over this timeframe, the program will operate with an average farebox recovery of over seventy-five percent, requiring just under \$165 million in total operational subsidies. These projections are based on the assumption that fares for the Amtrak *Cascades* service will not increase over time.

## Who's going to pay for it?

WSDOT's long-range year plan for Amtrak *Cascades* service outlines the various construction projects, equipment requirements, and operating expenditures that will need to be funded in order to achieve WSDOT's goals for intercity passenger rail service between Portland, OR, Seattle and Vancouver, BC. Development of improved Amtrak *Cascades* service is dependent upon funding from the state of Washington, Amtrak, Sound Transit, the state of Oregon, the province of British Columbia, the federal governments of the United States and Canada, other participating agencies and organizations, and passengers using the service.

### Funding for Amtrak *Cascades* Capital Projects

It is important to note that no long-term financial commitments have yet been made by any of the various funding entities that are described in this plan. However, this long-range plan assumes that the major capital construction projects that are needed to support expanded Amtrak *Cascades* service in the Pacific Northwest will be funded in the following manner:

- Projects necessary to provide faster, more frequent Amtrak *Cascades* service between downtown Portland, OR and the Columbia River will be funded by the state of Oregon, with potential funding coming from the federal government and Amtrak.
- Projects necessary to increase the level of *Sounder* commuter rail service in the central Puget Sound region will be funded by Sound Transit and the federal government.
- Projects necessary to provide faster, more frequent Amtrak *Cascades* service between the Columbia River and the Canadian border will be funded by the state of Washington, with potential funding coming from the federal government and Amtrak.
- Projects necessary to improve Amtrak *Cascades* service in British Columbia will be funded by the province of British Columbia, the Canadian federal government, and regional transportation agencies.

- Train sets and locomotives will be funded by the states of Oregon and Washington, with additional funds provided by Amtrak and the federal government.
- The Seattle Maintenance Facility will be funded by Amtrak, the federal government, the state of Washington, and Sound Transit.
- Station improvements will be funded jointly by local jurisdictions, regional, state and provincial governments, and the federal governments of the U.S. and Canada.
- The new rail bridge across the Columbia River will be funded by the railroads, the states of Washington and Oregon, and the federal government.
- Projects that provide a direct benefit to the BNSF will be funded by the railroad.

In 2003, WSDOT and the BNSF reached agreement on a legal framework that will govern the construction of Amtrak *Cascades* capital projects within the Washington segment of the Pacific PNWRC. This *Master Corridor Agreement* commits both parties and identifies expectations up front. This twenty year agreement outlines how each of the individual projects that WSDOT has identified for Amtrak *Cascades* service in Washington will be constructed, what operational benefits each project will produce, and under what conditions costs for the projects will be shared by the two parties. It is the only legal agreement of its kind between a railroad and a state government, and it is intended to streamline the construction process for both the BNSF and WSDOT in the years ahead.

### **Funding for Amtrak *Cascades* Operations**

Ticket-buying passengers, the states of Washington and Oregon, and Amtrak currently fund the operating costs for Amtrak *Cascades* service in the Pacific Northwest.

This long-range plan identifies anticipated operating costs and revenues over a twenty year planning horizon. However, this plan does not assign any specific operational funding amounts to our service partners. This is not possible at this time, as all participating agencies have limited budgets that are determined by their respective state legislatures and Congress. WSDOT will continue to work with the state of Oregon, Amtrak and other jurisdictions in order to secure the necessary funds to operate faster, more frequent Amtrak *Cascades* service between Portland, OR, Seattle, and Vancouver, BC over the next twenty years.

### **How will costs be allocated?**

WSDOT has been working closely with Sound Transit and the BNSF to integrate Amtrak *Cascades*, *Sounder* and freight rail service. A major

component of this integration is the need for physical improvements along the rail corridor. The funding for these improvements has been an ongoing negotiation among these operators.

### **How have WSDOT and Sound Transit integrated their programs?**

Coordination and integration of Amtrak, Sound Transit, and Amtrak *Cascades* schedules has thus far been informal. As development of the Amtrak *Cascades* and Sound Transit programs continues, integration of operations will become increasingly important.

The Amtrak *Cascades* service is more capacity-constrained than the *Sounder* service, even at full development. Tailoring infrastructure to service minimizes the amount of construction required, but it also prevents changes in the service (other than within the designed pattern). Each service level of the Amtrak *Cascades* program is designed to make the maximum use of the infrastructure that is constructed for that service level. Because there is generally little excess capacity, there is little ability to rearrange any of the schedules.

The infrastructure being constructed for the implementation of *Sounder* service has comparatively greater capacity. It is generally more practical to make some arrangement in a Sound Transit schedule than in a Amtrak *Cascades* schedule, especially at the later stages of Amtrak *Cascades* development, when traffic approaches capacity. However, detailed scheduling must accommodate the requirements of both services. If that is not possible, additional infrastructure must be constructed. Infrastructure should not be constructed to accommodate only occasional conflict.

### **Is it worth the investment?**

When asked to consider the full costs of transportation, most people would identify both private and public expenditures<sup>3</sup> that support each travel mode. Fewer individuals would consider the important role that travel time<sup>4</sup> and external costs<sup>5</sup> play in determining overall costs. Because these latter elements do not require out-of-pocket expenditures by either private or public groups, they are frequently overlooked. However, the hours dedicated to

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<sup>3</sup>Such expenditures typically include the costs associated with maintaining and operating the facility, often referred to as operational costs.

<sup>4</sup>Travel time simply refers to the amount of time it takes to get to your destination.

<sup>5</sup>External costs refer to the elements of your trip that aren't "out-of-pocket" expenses. These are often invisible expenses associated with the human environment, such as the impact to our air and water quality as a result of emissions and water run-off from our transportation systems.

travel represent time lost for either work or leisure, and the external costs associated with air pollution, noise impacts, and accident losses are important policy considerations that should not be ignored.

Since each mode relies on a different form of travel—highway travel consists of using personal cars and either driving alone or with passengers; airplanes travel in the air and can carry hundreds of passengers; and trains travel on tracks and also carry hundreds of passengers—it is essential to find a uniform measurement to compare modes. Economists and transportation planners have agreed on a common measurement, known as a passenger mile, to create a “level playing field” among the different modes. This permits a consistent measure of total system usage.

A passenger mile is determined by taking the total number of passengers (in a plane, train, or car) and multiplying that number by the total number of miles traveled. The number of total passenger miles is used to calculate cost per passenger mile. The total component cost (for example, yearly airport operational costs) is then divided by the yearly total passenger miles.

Comparison of Modes: Operating Costs

When these methods are applied to intercity passenger rail in the Pacific Northwest Rail Corridor, results reveal that passenger rail service is comparable to both air and

highway travel. This approach indicates that by 2023 rail costs will be approximately thirty-four cents per passenger mile, while highway travel is estimated to cost approximately seventy-six cents per passenger mile. **Exhibit 7-3** shows the results of the operating cost comparison.

Exhibit 7-3  
Comparison of Operating Costs

YEAR	AUTOMOBILE	PASSENGER RAIL	AIR TRAVEL
2004	\$0.43	\$0.31	\$1.00
Mid-Point	\$0.49	\$0.29	\$1.12
2023	\$0.76	\$0.34	\$1.77

Source: *Amtrak Cascades Cross-Modal Analysis Technical Report, 2004.*

Note: For a more in-depth discussion of the transportation mode cost comparison, see *Amtrak Cascades Cross Modal Analysis*.

## Comparison of Modes: Capital Costs

By year 2023, highway capital costs are not expected to exceed one cent per passenger mile, but they reach ninety-four cents per passenger mile for rail. **Exhibit 7-4**

presents these

findings. This variation is largely driven by three key factors:

- Rail is in a different place in the investment cycle. While highway and air are mature systems, rail is still in the midst of building a system infrastructure.
- Projected levels of ridership for each mode. Although total highway capital costs exceed those for rail, given the number of vehicle miles projected for the I-5 corridor by 2023, average costs are significantly lower for highway travel.
- The levels of investment in rail and highway are designed to meet different level-of-service goals.

The final step of the cross-modal analysis is to combine the total operating costs per mode with the capital costs.

## Conclusions

The results of these combined costs are shown in **Exhibits 7-5** and **7-6**. The cost per passenger mile for rail travel will begin to decrease in the years beyond the current planning horizon. This is because the rate of capital investment is expected to be significantly lower in the years beyond 2023. By then, improvements will be complete and service objectives met; therefore, future capital needs are likely to be limited to rehabilitation and maintenance needs.

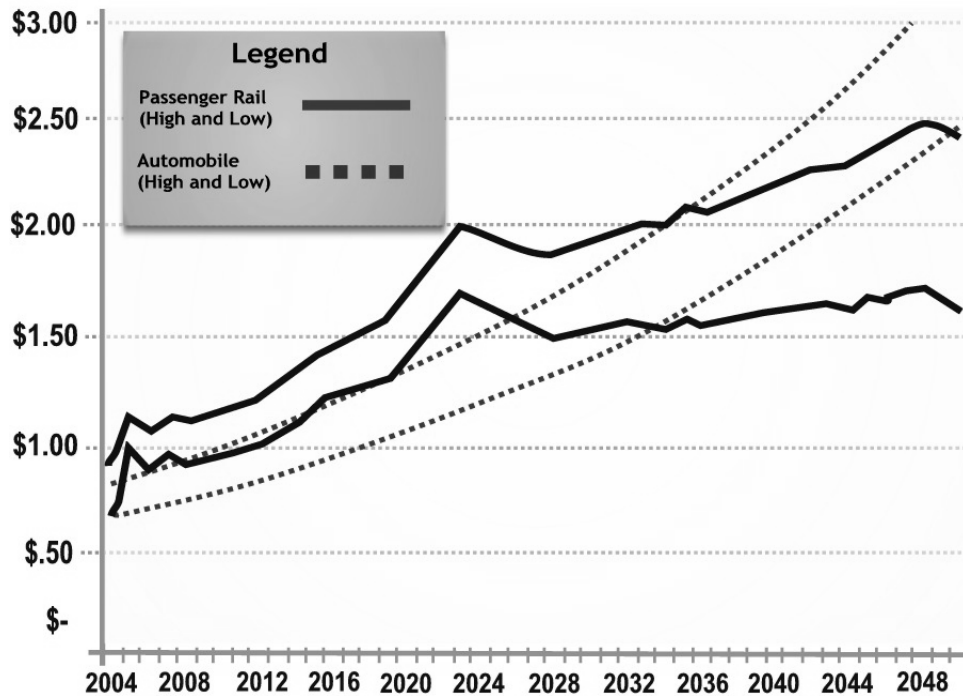
**Exhibit 7-4**  
**Comparison of Capital Costs**

YEAR	AUTOMOBILE	PASSENGER RAIL	AIR TRAVEL
2004	\$0.002	\$0.11	\$0.05
Mid-Point	\$0.001	\$0.38	\$0.06
2023	\$0.001	\$0.94	\$0.06

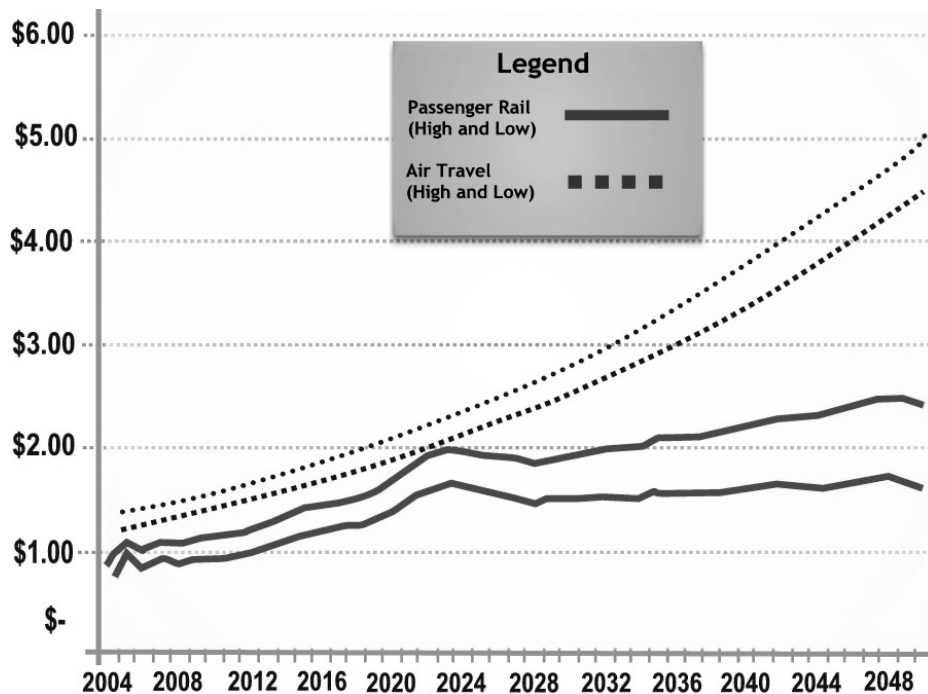
Source: *Amtrak Cascades Cross-Modal Analysis Technical Report*, 2004.



**Exhibit 7-5**  
**Comparison of Modes – Automobile and Passenger Rail**  
**Total Operating and Capital Costs**



**Exhibit 7-6**  
**Comparison of Modes – Air Travel and Passenger Rail**  
**Total Operating and Capital Costs**



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